V. *An Abſtract of the* Meteorological Diaries, *Communicated to the* Royal Society, *with Remarks upon them, by* William Derham, *D. D. Canon of* Windſor, *F. R. S.* [*Vide* PART IV. *in Tranſact.* N° 434.]

PART V. *Containing Meteorological Obſervations made at*

Hall *in* Saxony, 1729.
Goſlar
Wittemberg
Naples
Southwick
Sweden
Lunden
Swenæker
Riſinge
Bettna
Upſale
Hudiskſwald
Hernœſand
Bygdea
1728.

AN Abſtract of *Meteorological Obſervations* made at *Hall* in *Saxony* in 1729, by *Joh. Joach. Langen*, Math. P. P. O. and in the Year 1728, at *Goſlar* in *Lower Saxony* in *Germany*, by *Joh. Conrad. Trumphius*, M. D. & Pract. *Goſlar*, at *Wittemberg* in *Saxony*, by *Joh. Fred. Weidler*, J. U. D. & Math. Super. Prof. in Acad. *Witteb.*

Witteb. at *Naples*, by *Nic. Cyrillus*, in Urbe *Neap.* Pr. Med. Prof. at *Southwick*, in *Northamptonſhire*, by *George Lynn*, Eſq; and in *Sweden*, at *Lunden*, *Bettna*, *Upſale*, and *Bygdea* (mentioned in 1726,) to which the illuſtrious Obſervers have added Obſervations from *Swenæker*, in *Weſtro-Gothia*, Latitude 58° 10′, by *Torſtanius Vaſſenius*, V. D. Miniſt. in *Waſſenda*; at *Wiſingſœ*, by *Magnus Oxelgren*, Lect. Gymnaſii; at *Riſinge* in *Oſtro-Goth*, by *Sueno Laurelius*, Paſt. and Provoſt, at *Stockholm*, Lat. 59°.30′, by *Joh. Backman*, Citizen; at *Hudickſwald Helſingorum*, by *Olave Broman*, Paſtor there; at *Hernœſand* and *Angermann*, by *Jac. Renmarck*, Math. Lectore; at *Lœſanger* and *Umea*, Lat. 63° 43′, by *Bern. Ask*, Theol. Stud. and at *Torneao*, in *Weſtro-Goth.* Lat. 65° 43′, by *Abr. Fougt*, Paſtor there. Extracted for the Uſe of the *Royal Society*, by *William Derham*, D. D. F. R. S.

A TABLE *of the Higheſt, Mean, and Loweſt Barometrical Stations, in the Year* 1728.

	JANUARY.			FEBRUARY.			MARCH.		
	High	Mean	Low	High	Mean	Low	High	Mean	Low
Hall	29.4½	28.7½	28.1⅓	29. 7	28.10	28. 2	29. 2	28.9½	28. 5
Goſlar							31. 3	30.10	30. 6
Wittemberg	30.2½	29.5¾	28. 9	30.2⅞	29. 9	29. 3	29.9⅞	29. 5	29.1⅓
Naples	29.88	29.50	29.12	29.88	29.71	29.54	29.88	29.65	29.38
Southwick	30.08	29.37	28.67	30.10	29.84	29.58	29.88	29.55	28.83
Lunden	30.20	29.46	28.72	30.22	29.52	28.82	29.81	29.16	28.51
Swenæker	30.36	29.68	29. 0	30.35	29.32	28.29	29.73	29.05	28.37
Riſinge	30.20	29.55	28.90	30.20	29.52	28.85	29.67	29. 0	28.20
Bettna	30.80	30.10	29.40	30.80	30.12	29.45	30.21	29.55	28.90
Upſale	30.46	29.85	29.24	30.50	29.86	29.23	30.00	29.40	28.80
Hudickſwald	30.50	29.75	29.01	30.56	29.89	29.22	30.24	29.52	28.80
Hernœſand	30.60	29.95	29.30	30.50	29.79	29.08	30.25	29.47	28.70
Bygdea.	30.30	29.75	29.20	30.40	29.67	28.94	30.28	25.39	28.50

The Barometrical Table continued.

	APRIL.			MAY.			JUNE.		
	High	Mean	Low	High	Mean	Low	High	Mean	Low
Hall	28.11	28. 8	28. 5	29.1⅓	28. 8	28.3½	29.0¾	28. 8	28. 3
Goſlar	31. 4	30.11	30. 6	31. 5	31.0½	30. 8	31. 4	31.0½	30. 9
Wittemberg	30. 0	29.4½	28. 9	30. 1	29. 8	29.2½	30. 0	29.8½	29. 5
Naples	29.88	29.75	29.63	29.80	29.71	29.63	29.88	29.75	29.63
Southwick	29.94	29.48	29.03	29.96	29.51	29.07	29.93	29.70	29.27
Lunden	29.73	29.22	28.51	30.02	29.57	29.12	29.83	29.52	29.21
Swenæker	29.83	29.05	28.27	30.07	29.26	28.45	29.93	29.49	29.06
Riſinge	29.70	29.06	28.43	29.95	29.35	28.75	29.70	29.35	29.00
Bettna	30.22	29.63	29.05	30.50	29.90	29.30	30.20	29.89	29.58
Upſale	30.00	29.49	28.98	30.29	29.73	29.17	30.09	29.73	29.38
Hudickſwald	30.10	29.60	29.10	30.38	29.79	29.20	30.96	30.09	29.22
Hernœſand	30. 7	29.50	29.07	30.20	29.72	29.24	30.10	29.71	29.32
Bygdea	29.80	29.40	29.00	30.10	29.62	29.14	29.96	29.42	28.88

A Thermometrical Table of the Higheſt, Loweſt, and Middle Stations at Naples, Southwick, Lunden *and* Upſale, *in* 1728.

	JANUARY.			FEBRUARY.			MARCH.		
	High	Mean	Low	High	Mean	Low	High	Mean	Low
Naples	49.05	43. 5	38. 5	48. 0	44. 5	35. 0	39. 5	35. 9	32. 3
Southwick	79.	67	55	80	67	54	69	57	45
Lunden	83	68	54	91	73	56	123	98	74
Upſale.	91. 5	80. 9	68. 3	89. 2	77. 9	66. 6	72. 1	63. 0	53. 9

The Barometrical Table continued.

	JULY.			AUGUST.			SEPTEMBER.		
	High	Mean	Low	High	Mean	Low	High	Mean	Low
Hall	28.11	28. 8	28. 5	29. 0	28.8½	28. 5	29. 1	28.10	28. 8
Goſlar	31. 3	30.11	30. 7	31. 5	31. 0	30.9½	31. 5	31.0½	30. 8
Wittemberg	30. ¾	29. 7	29.3½	30. ½	29. 8	29.4½	30. 0	29.7½	29. 3
Naples	29.80	29.71	29.63	29.88	29.80	29.72	29.88	29.54	29.21
Southwick	29.95	29.57	29.20	30.04	29.51	28.98	30.02	29.53	29.04
Lunden	29.73	29.38	29.02	29.92	29.37	28.82	29.91	29.45	29.00
Swenæker	30.10	29.19	28.28	29.74	29.19	28.64	29.93	29.39	28.86
Riſinge	29.50	29.15	28.80	29.57	28.86	28.15	29.95	29.32	28.70
Bettna	30.12	29.66	29.20	30.10	29.56	29.02	30.38	20.83	29.28
Upſale	29.91	29.55	29.20	29.91	29.45	29.00	30.17	29.71	29.25
Hudickſwald	30.05	29.61	29.18	29.90	29.48	29.07	30.21	29.74	29.27
Hernœſand	29.97	29.5[illegible]	29.10						
Bygdea	29.85	29.42	29.00	29.96	29.58	29.20	30. 2	29.53	29.05
Torneao				29.85	29.56	29.27	29.92	29.56	29.20

The Thermometrical Table continued.

	APRIL.			MAY.			JUNE.		
	High	Mean	Low	High	Mean	Low	High	Mean	Low
Naples	42. 5	33. 2	24. 0	26. 0	18. 5	11. 0	16. 0	9. 7	4. 5
Southwick	71. 0	53.	36	56	40	24	50	35	19
Lunden	148	118	85	172	145	118	176	153	130
Upſale	69. 5	52. 1	44. 7	54. 7	45. 0	35. 3	42. 0	33. 6	25. 2

The Thermometrical Table continued.

	JULY.			AUGUST.			SEPTEMBER.		
	High	Mean	Low	High	Mean	Low	High	Mean	Low
Naples	13. 5	8. 2	3. 0	16. 0	10. 0	4. 0	26. 5	17. 1	7. 7
Southwich	50	34	17	56	39	23	65	48	32
Lunden	172	152	132	153	133	113	150	122	94
Upſale	37. 2	31. 0	25. 5	40. 2	32. 8	25. 5	58. 4	46. 2	34. 6

The Barometrical Table continued.

	OCTOBER.			NOVEMBER.			DECEMBER.		
	High	Mean	Low	High	Mean	Low	High	Mean	Low
Goſlar	31. 5	31. 0	30. 6	31. 6	30. 5	30. 6	31. 8	31. 1	30. 4
Wittemberg	30. ½	29. 6	29. 2	30. ⅓	29. 0	28. 9	30. 2	29. 6	29. 1
Naples	29.80	29.71	29.52	29.96	29.67	29.38	29.80	29.51	29.21
Southwick	29.98	29.31	28.64	29.95	29.45	28.91	30.04	29.42	28.80
Lunden	30.12	29.51	28.90	29.90	29.26	28.62	29.92	29.32	28.73
Swenæker	30.26	29.55	28.84	29.95	29.14	28.34	30.16	29.53	28.91
Riſinge	30.16	29.43	28.70	29.80	29.05	28.30	30.05	29.42	28.80
Bettna	30.80	30.02	29.25	30.40	29.70	29.01	30.70	30.11	29.52
Upſale	30.49	29.83	29.16	30.10	29.44	28.79	30.49	29.87	29.25
Hudickſwald	30.97	29.99	29.01	30.22	29.47	29.72	30.60	29.95	29.30
Bygdea	30.40	29.70	29. 0	30.24	29.42	28.60	30.50	29.80	29.10
Torneao	29.90	29.58	29.25						

The Thermometrical Table continued.

	OCTOBER.			NOVEMBER.			DECEMBER.		
	High	Mean	Low	High	Mean	Low	High	Mean	Low
Naples	40. 0	31. 3	22. 5	48. 0	42. 0	34. 0	54. 5	54. 5	44. 7
Southwick	71	56	41	84	64	43	87	72	58
Lunden	119	98	78	109	87	64	83	71	59
Upſale	68. 2	58	47. 7	98. 0	57. 0	56. 1	89. 6	76. 8	64. 0

A Table of the Rain *at* Southwick *and* Naples *in the Year* 1728.

	Southwick		Naples			Southwick		Naples	
	Inch	Cent	Inch	Meaſures		Inch	Cent	Inch	Meaſures
Jan.	4.	00	4.	15½	Jul.	3.	21	0.	00
Feb.	0.	99	0.	00	Aug.	0.	96	0.	00
Mar.	3.	27	0.	5	Sep.	0.	86	4.	4
Apr.	1.	97	0.	14	Oct.	2.	79	6.	17½
May	1.	44	0.	00	Nov	1.	52	2.	7
Jun.	2.	82	1.	2½	Dec.	2.	43	6.	8½

Rain in the whole Year,

At Southwick, *is* 26 *Inches, and* 26 *Centeſimals.*

At Naples, *is* 19 *Inches, and* 14 *Meaſures.*

Remarks

Remarks on the Meteorological Obſervations of the Year 1728.

As the Obſervations of this Year, which the *Royal Society* hath received from many, and very diſtant Parts of the World, are two large and numerous to be printed in the *Philoſophical Tranſactions*, or read at the Society's Meetings; ſo to make them as uſeful as poſſible, I have put as many of them as I could into Tables, to be ſeen and compared at an eaſy View, as I have done in former Years: But I am forced to omit ſuch of them, where no Account is given of the Inſtruments they uſed, or where none were made uſe of at all, but only verbal Deſcriptions given, that Tables would not admit of. But the Places mentioned in the Tables, had the Society's Glaſſes of Mr. *Haukesbee*'s making.

The *Barometrical* Obſervations I need not ſatiate the Society with Remarks upon, becauſe I have made divers of that Kind, upon the preceding Years: only I ſhall repeat two Things that I formerly took notice of, and have had frequent Confirmations of this Year; *viz.* 1. The great Conformity of the Aſcents, Deſcents, and Stations of the Mercury in the Barometer. 2. That the Range of the Mercury is much greater in the Northerly than Southerly Climes.

As for the *Thermometrical* Obſervations, I have inſerted all that were made with the *Royal Society*'s Glaſſes: but ſuch as were made with other Thermometers, it would have been of little or no uſe to have taken notice of them, unleſs I could have reduced them to ſome known Meaſure; which only two of the curious Obſervers enabled me to do; but I found that a Matter ſo perplext and difficult, as not to anſwer the great Trouble of it, eſpecially conſidering that theſe Tables exhibit Obſervations made in different and diſtant Parts, *viz. Italy, Germany, England*, and *Sweden*, by which an Eſtimate may be, in ſome meaſure, made of the Temperature of thoſe different Climates of the World. In order to which, I muſt repeat what I mentioned in ſome preceding Year; that in the *Royal Society*'s Glaſſes, the Point of *Extream Heat* is 5 Degrees above 0, that *Temperature* is 45 Degrees below 0, and *Freezing* at 65 Degrees. And if we caſt our Eye upon the ſeveral Months, particularly thoſe of Winter, eſpecially if we conſider that which I have remark'd in 1727, from Dr. *Cyril*, concerning the *Freezing-Point* at *Naples* to be at 55 Degrees, which is at *London* at 65 Degrees, and at *Chriſtiana* and *Bengal* probably as different alſo. I ſay, conſidering theſe Things, it is ſurprizing that the Heat and Cold of thoſe diſtant Places, is not as different as their Northerly and Southerly Situations. But at *Lunden*, I was ſurprized to find the Thermometer much lower in the warmer Months than at *Upſale*, or any other of the *Swediſh* places, 'till I found that in all thoſe Months, they had continual Cold and Rain, when the other places mention little but Fair, or Cloudy, and but little Rain or Cold. And this minds me of a former Obſervation, *That Cold is the Parent of Wet*, eſpecially in Summer.

As to the *Winds* and *Weather*, ſo many are the Places of Obſervation, and ſo many and ſo various the Obſervations, that its next to impoſſible to give

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a tolerable Abridgment of them: and therefore my Remarks on the foregoing Years, eſpecially on the ſame Places * and Parts of the World, muſt ſuffice here.

The Quantity of *Rain* and *Snow* were obſerved at *Naples*, *Riſing*, *Bettna*, *Upſale*, *Hudickſwald*, and *Southwick*: but I find no Deſcription of the Inſtruments wherewith they obſerved, nor of their Meaſures, except at *Southwick* and *Naples*, and therefore am forced to omit all but the two latter, in which the Depth is meaſured by *Engliſh* Meaſure, the *Southwick*, by Inches, and hundredth Parts of an Inch; and the *Naples*, by *Engliſh* Inches, and the Obſerver's Meaſures, 23 of which make an *Engliſh* Inch.

Laſtly, That I may omit as little as may be of what the illuſtrious Obſervers take notice of, I ſhall add the Meteors they mention, together with ſome of my own, that happened about the ſame Time.

The firſt was a *Lumen boreale* at *Bettna*, in the Night after *Mar.* 20; and at half an Hour after 8 on *Mar.* 22, at *Windſor*, I ſaw an unuſal ſort of *Streaming*, in which the Columns were not (as uſually) conical, or pointed, nor riſing towards the Zenith-point; but were with parallel Sides, and roſe perpendicularly to the Horizon. They were very bright, emitting a Light equal to that of the Moon in her Quarters. Alſo they roſe from a Bank of Vapours, not curved at Top (as uſually) but lacinated, or broken.

Alſo on *Mar.* 24, the curious *Bettna* Obſerver ſaith, there was, the Night before, *Lumen Efflammans boreale*; which was alſo ſeen at *Læſanger*.

On *Auguſt* 26, at Night was a remarkable *Lumen boreale* at *Bettna*. And the Night before at 10 Hours

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* *Vide Tranſact.* n. 433, p. 334. & *ſeq.*

20 Minutes *p. m.* a Gentleman going from my Houſe, ſaw towards the Eaſt, about 30 Degrees high, a *Ball of Fire*, about 4 Inches Diameter, blazing, and ſtanding ſtill at firſt, and preſently after, it ran towards the North, and in about five, or more Minutes, he heard an Exploſion like Thunder. Its Blaze emitted a Light equal to that of the Moon at Full.

At the ſame Time, the News-papers ſay, a *Light* in the Sky, like a Comet, was ſeen at *Watford* in *Hertfordſhire*, with Sparks of Fire iſſuing from its Tail; that then it brake out with a prodigious Luſtre, like the Sun, which laſted not long, and was followed with a terrible Clap of Thunder, the Stars twinkling all the while, and not a Cloud to be ſeen. Which Clap, I doubt not, was the ſame which my Friend heard, and which was five or more Minutes in its Paſſage hither.

At *Bettna*, *Lumina borealia* were ſeen on the Nights after *Sep.* 18, 19, and 24; the ſecond of which covered half the Heavens. And on *Sep.* 21, about 10 Hours *p. m.* I obſerved, at *Upminſter*, an unuſual ſort of Tan-coloured thick Vapours towards the N.W.*b.*N. but withal lightſome, and ſuch as the Stars might be ſeen through. And after ſome Time, they ſent forth, in divers Places, *Streaming Lances*, gently and gradually coming and going.

On *Oct.* 13, I ſaw that uncommon ſort of *Streaming* at *Redbridge*, near *Southampton*, the Account of which is printed in *Philoſ. Tranſ.* N°. 410, and the ſame Night at *Bettna* was *Lumen boreale eructans Flammam*, as the Obſerver expreſſes it. At *Læfanger* alſo thoſe Streamings were on the ſame Night, and on the 15th, 18th, 19th, and 23d.

On *Oct.* 19th, a *Parhelius* was at *Lunden*, and on the 22d a *Lumen boreale* at *Wittemberge.*

On *Nov.* 12th, at *Windſor*, we had conſiderable *Streaming*; and the ſame was at *Bettna* and *Umea*; and on the 29th at *Læſanger*; and again at *Umea* on *Dec.* 24.

An APPENDIX *to the Remarks on* 1728, *and ſome of the Years preceding it.*

After I had finiſhed the foregoing Obſervations on the Year 1728, I received the curious Oſervations of the illuſtrious *Marquiſs Poleni*, made at *Padua*, * for ſix Years; ſuch of which as are conformable to mine, I ſhall ſubjoin by way of Appendix.

The firſt Thing he gives an Account of is, the *Quantity of Rain and Snow* (in *Engliſh* Meaſure, and according to the Old Stile) that fell before and after this Year 1728, in ſix Years Time, in the following Table.

A Table of the Rain at Padua, *in the Years*

	1725	1726	1727	1728	1729	1730
	Inch Dec.	Inch Dec	Inch Dec.	Inch Dec.	Inch Dec.	Inch Dec.
Janu.	0. 521	1 .355	5 .955	4 .278	1 .085	0 .112
Febr.		1 .460	1 .073	1 .050	1 .245	2 .906
March	0 .889	3 .168	1 .878	4 .832	2 .902	4 .592
April	4 .019	3 .998	0 .498	1 .419	2 .768	1 .638
May	3 .625	1 .368	3 .530	3 .403	2 .634	4 .467
June	0 .036	2 .608	2 .476	2 .103	3 .134	6 .205
July	2 .297	2 .357	2 .930	4 .016	4 .526	2 .339
Auguſt	5 .185	1. 268	5 .067	5 .186	0 .578	4 .269
Sept.	2 .647	2 .900	4 .164	6 .948	3 .267	1 .090
Octob.	7. 104	0 .179	6 .576	5 .163	6 .294	5 .254
Nov.	3 .636	2 .277	5 .091	6 .836	4 .186	0 .534
Dec.	0 .030	2 .390	7 .169	7. 599	2 .804	0 .894
Year	29.989	25.328	46.407	52.833	35.423	34.300

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* *Vide Tranſact. n.* 421, *p.* 201. & *ſeq.*

From this Table he obſerves, that the *Februaries* were the drieſt *Months*, and 1726, the drieſt *Year* in all the Six, and that the *Octobers* were the wetteſt *Months*, and 1728 the *wetteſt* of all the ſix Years.

Further alſo he ſaith, that in the four *Seaſons* of the Years (reckoning their beginning from the 10th Day of their reſpective Months, *viz.* of *December*, *March*, *June* and *September*; that I ſay) leſs Wet falls in Winter and Spring, than in Summer and Autumn, and that the wet Weather increaſes, as the Seaſons advance; that in Winter is the leaſt Wet; that it increaſeth in Spring; is more in Summer; and moſt of all in Autumn.

For the Proof of this, he hath made a Table of the mean Quantities of the Rain in the four Seaſons of each of the ſix Years; the Sums of which ſix Years Rain, are in Winter, 39.490 Inches; in Spring, 52.188 Inches; in Summer, 58.25 Inches; and in the Autumn, 74.558 Inches. But in the many Years that I obſerved the Weather at *Upminſter*, I find it not ſo.

After theſe Obſervations of the Weather, the illuſtrious *Marquiſs* proceeds to the *Barometrical Indications* of it; and hath made Tables of the Riſing and Falling of the Quickſilver, together with the Coaſt of the Winds, both againſt Rain, and alſo againſt Snow, hoping to predict from thence the ſeveral ſorts of Weather. But I omit the Tables, becauſe I think little of general uſe can be concluded from them but what is commonly known.

I omit alſo his Table * of the Sum and Mean Altitudes of the Barometer, and Thermometer; but his following Table may be of uſe. A TA-

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* *Vide Tranſact. n.* 421, *p.* 210.

A TABLE *of the Higheſt and Loweſt Station of the Barometer, with the Winds and Weather in the*

Year	Month	Day O. S.	Barometer Higheſt	Barometer Loweſt	Winds	Weather at the ſame Time
1725	Janu.	19	30.28		W	Fair.
	Dec.	8		28.56	S W 4	Cloudy.
1726	Nov.	28	30.18		N	Fair.
	Feb.	13		28 92	S W	Cloudy.
1727	Nov.	20	30.24		N W	Fair.
	Octob.	29		28.80	S 2	Cloudy.
1728	Dec.	2	30.20		N	Thin Clouds.
	Dec.	12		29.00	N W	Small Rain.
1729	Dec.	20	30.30		W	Somewhat Cloudy.
	Nov.	10		28.90	N	Rain.
1730	Dec.	20	30.40		N	Fair.
	Feb.	27		28.98	S E	Sunſhine with Cloudy

From this Table at appears, from the Higheſt and Loweſt Stations in the ſix Years, that the greateſt Range of the Barometer, is 1.84 Inches; but at *Naples*, it is only 94 Centeſimals of an Inch; and what it was at other Places, I have given ſome Account of in my Remarks on 1727.

The illuſtrious Obſerver hath alſo been very curious, and ſedulous in his Obſervations of the *Thermometer*; which I am ſorry I can give no acceptable Account of, for want of ſo much Knowledge of his Thermometer, as may enable me to compare his Obſervations with mine.

He hath alſo compared with his own, the Quantities of *Rain*, and the *Barometrical Range* obſerved at *Paris*, by *M. de la Hire*; and finds that the

Paris

Paris Rain is 16.4$\frac{7}{12}$ Lines, and the *Barometrical Range* 2$\frac{5}{12}$ Lines more than the *Padua*.

The laſt Thing which the illuſtrious *Marquiſs* takes notice of is the *Magnetical Declination*, which he ſaith is 13 Degrees *Weſt*, and hath decreaſed in the ſix Years $\frac{10}{60}$ths; that every Day there is a ſmall Alteration in the Declination, ſo that it doth not continue the ſame a whole Day together; that the Declination of all needles (eſpecially if touched by different Magnets) is different a few Sexageſms. But theſe Niceties I recommend to the Enquiry of the Curious, becauſe they diſagree with the Obſervations of *Gilbert*, and moſt of the Magnetical Writers.

FINIS.

ERRATA.

NUMB. 428, *p.* 85. l. 4. *r. Bottarius.* *n.* 429 *p.* 143 l. 19. *r. I was ſhewed.* *n.* 430, *p.* 157. l. 5. from the Bottom, *r. manet.* *ibid. p.* 191. l. 3. *r. de polythalamiis.* *n.* 434. *p.* 415. l. 8. from the Bottom, *r. Rerum.*